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ISSUES CONCERNING THE COMPARISON OF SFE EXTRACTION RESULTS
TO THOSE OBTAINED USING SONIFICATION

United States Environmental Protection Agency
Washington, D.C. 20460
Office of Solid Waste and Emergency Response

March 10, 1994

Dr. Joe Tehrani
SFE Programs Manager
Isco, Inc.
Separation Instruments Division
P.O. Box 5347
Lincoln, Nebraska 68505

Dear Joe:

Thank you for your letter of January 25, 1994, submitting the results of the BCO PAH study using SFE as the preparative method. While we have not yet had the time to review it in great detail, there is one major issue in the preliminary validation that causes OSW considerable concern.

The issue of concern is the comparison of the SFE extraction results to those obtained using Sonication (Method 3550) rather than Soxhlet extraction (Methods 3540 or 3541) for a validation study. It is well known that target analyte recoveries using Method 3550 are lower than those obtained using either Method 3540 or Method 3541 (See References 1 and 2 below). OSW has also made it clear that validation of new extraction procedures should be done with comparison of results to the most rigorous validated reference method, i.e., Soxhlet extraction. Prior to making an informed evaluation on the BCO PAH method, the SW-846 Organic Methods Workgroup would like to see both single laboratory and round robin data evaluated against Soxhlet extraction using either Method 3540 or 3541.

If you have any further questions, please call me at 202-260-7459. I am enclosing for your information a copy of Reference 1.

Sincerely,
Barry Lesnik, Chemist
Methods Section (5304)
RCRA Organic Methods Program Manager

Attachment

References

1. Christopher S. Hein, Paul J. Marsden, Arthur S. Shurtleff, "Evaluation of Methods 3540 (Soxhlet) and 3550 (Sonication) for Evaluation of Appendix IX Analytes from Solid Samples", S-CUBED, Report for EPA Contract 68-03-33-75, Work Assignment No. 03, Document No. SSS-R-88-9436, October 1988.
2. Lopez-Avila, V. (W. Beckert, Project Officer); "Development of a Soxtec Extraction Procedure for Extraction of Organic Compounds from Soils and Sediments"; U.S. Environmental Protection Agency. Environmental Monitoring and Support Laboratory. Las Vegas, NV, October 1991; EPA 600/X-91/140.